

Remarks

Independent claims 1 and 8 have been amended to incorporate the limitations of dependent claim 5 and 13 - that the base material of the nonwoven fabric is any of PET, PE, PP, rayon, cotton, and Nylon, and, consequently, claims 5 and 13 cancelled.

New dependent claims 15 and 16 include the features that the second filtration material has a pore diameter larger than a pore diameter of the first filtration material to improve separation efficiency of oil mist from gas.

Thus, the larger pore diameter material is on the exit, not entry, side of the filter. As explained on pages 7 and 8 of the specification, the oil mist is trapped by the first material and condensed into oil drops which are pushed by the gas flow into the second material which prevents drop scattering and increases their size so that, when they exit at the outer surface, the drops are sufficiently large to fall under gravity and accumulate at the bottom of the housing without being scattered by the gas and ejected from the outlet. At the same time, a portion of the oil mist that has passed through the filter is trapped on the inner surface of the first material and accumulates as drops on the bottom surface inside the first filter element and, when exceeding a predetermined amount, ooze out and fall to the bottom surface of the housing. The condensation of the oil mist in the first material and the increase in drop size of the condensate during

passage through the second material is claimed explicitly in new independent claims 17 and 18.

Experiments have indicated that the claimed combination of glass paper as a first oil mist trapping and condensing material with a non woven fabric of any of the above exit materials is the most suitable. The claimed combination is not disclosed or suggested in the cited references.

The Examiner has rejected original claims 1-14 under 35 USC 103 as being unpatentable over Erdmannsdoerfer in view of any one of Head et al, Brownell and Kennedy

In contention, it is firstly pointed out that Erdmannsdoerfer, teaches a wound glass fiber thread, not the claimed glass paper, and employs the glass thread as an inner coarser, not finer, filter material, which represents a contrary, opposite approach to the claimed invention.

Head teaches an extremely coarse glass fiber mat (incorporating 1/4 inch openings), not the claimed glass paper. Furthermore, the mat is positioned as an exit, not entry, filter material - an even coarser glass fiber mat is taught as an entry filter material - again contrary to the claimed invention. There is no suggestion of using any of the nonwoven materials now claimed as filter materials.

The Brownell teaching is specifically concerned with liquid filters, not gas filters as claimed, clearly requiring an entirely different set of design criteria, selection of materials etc. Furthermore, Brownwell does not disclose or suggest glass paper as a

filter material. The wound paper medium 18 referred to by the examiner is manufactured from wood pulp and is merely taught as including some glass fibers. It is clearly not glass paper. Furthermore, the winding ultimately forms the exit filter. The technician seeking to improve a gas filter would not be motivated to address the teaching of a liquid filter and isolate and extract elements therefrom for combination with or substitution for elements of a gas filter given the dramatic differences in flow rates, viscosity, permeability and reactivity and so forth.

Kennedy does not teach the provision of a glass fiber paper as an entry layer but a bed consisting of a single mat having two merging layers - a collecting fiber layer 20 of a variety of known materials including possibly glass laid batts or plies of glass fiber. Kennedy teaches that the collecting layer 20 does not have the inherent cohesiveness and self supporting characteristics of glass fiber sheet (glass paper) and must be positionally stabilized by stabilizing fibers 30 which penetrate and are dispersed interstitially in the glass laid batt. As stated in col 7; lines 14,: "Mechanical stability of the collecting fiber layer 20 is not achieved by obtaining a high bulk density in mat 10 but is provided primarily by the stabilizing fibers 30." Clearly, the Kennedy approach of an unformed relatively loose fiber batt is entirely different from the claimed invention which utilizes inherently self supporting/mechanically stable glass fiber paper.

The Examiner's assertion that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide layers of different filtering materials wound around the filter support as taught by any one of

Head et al , Brownwell , Kennedy in the gas filtering device of Erdemannsdoerfer to provide an improved process for removing liquid aerosols and soluble solids from a moving stream of gas through the mist eliminator cannot be sustained .

As noted above, first, none of the cited references teach a filtration portion of glass paper so the limitations of claims 1, 8 17 and 18 could not be obtained by any notional isolation extraction and combination of elements, even by improper mosaicing or otherwise.

Furthermore, the technician seeking to improve the gas filter of the primary reference would not be motivated to address the teaching of Brownell for a solution as, considered properly as a whole, Brownell teaching is specifically directed to liquid filters which, as pointed out above, the technician improving a gas filter would not be motivated to address the teaching of a liquid filter and isolate and extract elements therefrom for combination with or substitution for elements of a gas filter given the dramatic differences in, for example, flow rates, viscosity, permeability, wetting, electrostatics, reactivity and so forth.

Furthermore, no combination of references teaches the combination of a gas entry filter material of glass paper and the claimed coarser, unwoven gas exit filter material.

Accordingly it is submitted that the examiner's rejection as it may be applied to the amended claims is inappropriate and that the claims define patentable subject matter.

Authorization is given to deduct the small entity fees of \$160 in respect of
the additional independent claim and an extension of time of one month, now
requested.

Respectfully submitted,

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This certifies that this paper is being transmitted by facsimile to
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By Robert W. J. Usher, May 19, 2005